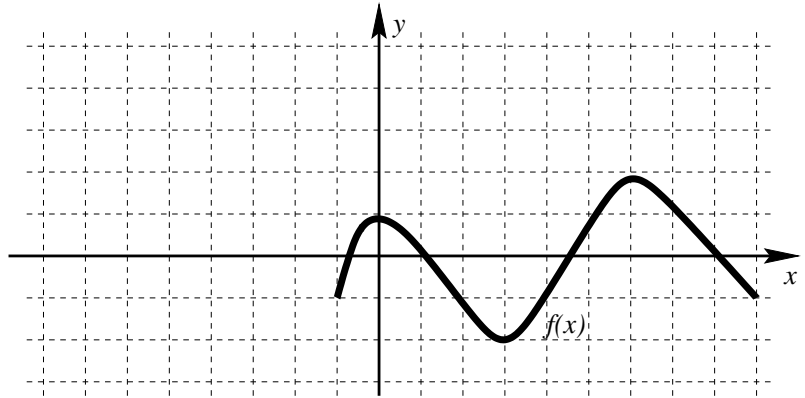


Math 150: Midterm #1

Instructor: Sergei Chmutov

1. The graph of a function $f(x)$ is on the picture. Draw the graph of the function $g(x) = f(1-x) + 2$ on the same picture as neat as possible.



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2. Find the asymptotes and draw the graph of the function $f(x) = \frac{(x-2)(x^2+1)}{x^2-1}$

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3. Solve the inequality $x^3 + 2x^2 - 8x > 0$

4. Find functions $f(x)$ and $g(x)$ such that $(f \circ g)(x) = \log_2(\sqrt{x+1})$

5. Solve the equation $\log_2(2x+6) = \log_2(x-1) + 2$

BONUS PROBLEMS. (Extra credit 10pt each)

6. Find the inverse function $f^{-1}(x)$ of the function $f(x) = \frac{11x-5}{-3x+1}$

7. Solve the equation $2^{x^2} = (2^{3x}) \cdot \frac{1}{4}$